

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY
NEWARK VICINAGE**

OCCIDENTAL CHEMICAL)	
CORPORATION,	)	Hon. Judge Madeleine Cox Arleo
	)	Hon. Magistrate Judge Joseph A.
Plaintiff,	)	Dickson.
	)	Civil Action No. 2:18-CV-11273
v.	)	(MCA-JAD)
)	
21ST CENTURY FOX AMERICA,	)	DEFENDANT ENPRO
INC., <i>et al.</i>,	)	HOLDINGS, INC.'S ANSWERS
	)	AND OBJECTIONS TO
Defendants.	)	STANDARD SET OF
	)	INTERROGATORIES TO BE
	)	ANSWERED BY PLAINTIFF AND
	)	DEFENDANTS

Pursuant to Federal Rules of Civil Procedure 26 and 33, Local Civil Rule 33.1, and Paragraphs 14 and 15 of the Second Pretrial Scheduling Order (ECF No. 550), Defendant EnPro Holdings, Inc., the successor to Coltec Industries Inc (collectively referred to as “EnPro Holdings, Inc.” or “Defendant”) submits the following Answers and Objections to the Standard Set of Interrogatories to Be Answered by Plaintiff and Defendants (“Interrogatories”).

During the parties’ negotiations, the parties agreed to reserve the right to raise and challenge objections to the Interrogatories based on individual circumstances: “Each party may have individual circumstances and objections regarding the application of these interrogatories and the burden in answering them. Therefore, all parties reserve the right to object to any of these interrogatories on the grounds allowed for under Federal Rule of Civil Procedure 33. The parties also reserve their rights to challenge the validity of any such objections.” Interrogatories at p. 7 n.1.

EnPro Holdings, Inc.'s answers are made upon information and belief, based on EnPro Holdings, Inc.'s investigation to date of those sources within its control where it reasonably believes responsive information may exist. EnPro Holdings, Inc. objects to the Interrogatories to the extent they purport to impose a duty to search for and/or provide information that is not within its possession, custody, or control. EnPro Holdings, Inc. reserves the right to amend or supplement these responses in accordance with applicable rules, including if and when additional information is located.

To the extent EnPro Holdings, Inc. answers any of these Interrogatories by referencing documents pursuant to Fed. R. Civ. P. 33(d), EnPro Holdings, Inc.'s production of documents will be made in accordance with the Protocol for Production of Documents and Electronically Stored Information (ECF No. 544), the Court's Second Pretrial Scheduling Order (ECF No. 550), and any subsequently entered Court scheduling order. To the extent these Interrogatories call for production of confidential information, EnPro Holdings, Inc. will produce such information in accordance with the Court's February 8, 2019 Protective Order (ECF No. 543).

EnPro Holdings, Inc. assumes that the Interrogatories seek only information not protected from discovery or disclosure pursuant to the attorney-client privilege, the work product doctrine, the settlement privilege, the common interest privilege, the joint defense privilege, or other applicable privileges or protections, including information prepared for purposes of the EPA Allocation and/or submitted to EPA or the Allocator ("EPA Allocation Information," and collectively, "Privileged/Protected Information"). EnPro Holdings, Inc. reserves the right to demand the return and/or destruction of any inadvertently produced Privileged/Protected Information. Any such inadvertent production does not constitute a knowing waiver of the attorney-client privilege, the work-product doctrine, the settlement privilege, the common

interest privilege, the joint defense privilege, or other protection from discovery or disclosure under any other relevant statutory or case law or other applicable privilege or protection.

Finally, the correct party to this litigation is EnPro Holdings, Inc., the successor to Coltec Industries Inc, which is the successor to the Crucible Steel entity that operated the “Property” as defined in these Interrogatories. The correct party to this lawsuit is not “EnPro Industries, Inc., formerly Crucible Steel.” EnPro Holdings, Inc. has previously asked Plaintiff to take steps to correct the error so that the proper party is named.

STANDARD INTERROGATORIES

1. Identify each Property at Issue at which You have conducted Operations.

ANSWER: Crucible Steel Corporation (affiliated with EnPro Holdings, Inc.) conducted Operations at a facility (the “**Facility**”) in Harrison, New Jersey. The western portion of the Facility, referred to herein as the “**Guyon Property**,” is a ±48 acre site located at 1000 South Fourth Street, 900 South Fourth Street, 900 Frank E. Rodgers Blvd, 1000 Frank E. Rodgers Blvd., and 900 – 1000 South Fourth Street, Harrison, New Jersey. The eastern portion of the Facility, referred to herein as the “**Spiegel Property**,” is a 14.85 acre site located at 600 Cape May Street, Harrison, New Jersey, currently the location of Red Bull Stadium.

2. For each Property at Issue identified in response to Interrogatory No. 1, describe Your Operations and the dates during which they occurred, Including any changes in the Operations that occurred over time.

ANSWER: EnPro Holdings, Inc. objects to this Interrogatory on the basis of relevance and as overly broad because it seeks information regarding all changes to EnPro Holdings, Inc.’s Operations, regardless of whether such changes had any possible connection to releases of COCs

to the portions of the Passaic River at issue in the Complaint. Subject to and without waiving such objections, EnPro Holdings, Inc. responds as follows:

Crucible's Facility operations involved steel manufacturing and finishing. Crucible Steel Corporation ("Crucible") operated its Atha Works steel mill on the Guyon Property from 1900 until 1947. Structures at the property included furnaces (crucible, open hearth, electric arc, heat treating, annealing, and tempering furnaces), mills (rolling mills, bar mills, a wire rod mill, and a billet mill), presses (hydraulic and hydraulic forging, drawing, and piercing presses), hammers (steam hammers and a hammer shop involving forging and finishing hammers), upsetting and forging machines, foundry equipment, a forge shop, a warehouse, a low pressure turbine system, an inter-mill railroad line, a steel pickling plant, a chipping building, a machine shop, a gun barrel shop, a tin shop, a treating building, a pipe cutting and fitting building, a hydraulic plant, a substation, an ordnance shop, a locomotive and machine repair shop, a magnet foundry, storage buildings, a reservoir, above-ground oil storage tanks, an offices and laboratories building, and a research building.

Crucible operated its Spaulding & Jennings Works at the British Shell Shop on the Spiegel Property from 1949 to 1973, producing ordnance for the British government.

3. Identify and describe any transaction(s) related to the ownership of the Property at Issue identified in response to Interrogatory No. 1.

ANSWER: Crucible acquired 67 acres of the Facility in 1900 as part of a multi-company transaction that created Crucible. The original acreage of the Facility is uncertain, but Crucible acquired 20 additional acres in 1917.

Crucible operated its Atha Works steel mill on the Guyon Property from 1900 until 1947. Crucible sold to Charles F. Guyon, Inc. ("Guyon") approximately 38 acres of the Guyon

property in 1947, and an additional 7 additional acres in 1967. Guyon leased a portion of the Guyon property to its subsidiary, Fabco Piping, Inc., from July 1, 1980 to June 30, 1988.

In approximately 1938, Crucible constructed the British Shell Shop on the 14.85 acres Spiegel Property for use as a rolling mill. From 1949 to 1973, Crucible operated its Spaulding & Jennings Works at the Spiegel Property. Crucible sold the Spiegel property to Spiegel Trucking, Inc. in 1974.

4. To the extent You intend to claim You are not the legal successor to the business entity that conducted the Operations described in the response to Interrogatory No. 2, Identify and describe any transaction(s) related to the ownership of the business entity that conducted the Operations described in response No. 2. The time period for this interrogatory is from the earliest date of Your Operations to the present.

ANSWER: EnPro Holdings, Inc. is not making a claim that it is not the legal successor to Crucible for purposes of this litigation.

5. For each Operation identified in response to Interrogatory No. 2, Identify: (a) the raw materials used; (b) products and intermediates resulting from the Operations; and (c) any Waste Materials.

ANSWER: The Atha Works steel mill on the Guyon Property manufactured and processed steel and steel products. Petroleum-based products were used in heating, manufacturing, and lubrication. The Spaulding & Jennings Works at the British Shell Shop on the Spiegel Property produced ordnance for the British government – specifically, cold rolled alloy, stainless, and high carbon steel specialties, including magnets, precision castings, cast alloy tools and alloy welding rods. EnPro Holdings, Inc. is not aware of any further information regarding the raw materials used for, and intermediates and Waste Materials resulting from,

Operations at the Facility.

6. For each Operation identified in response to Interrogatory No. 2, Identify: (a) each specific location of any storage area(s) (such as tanks, pits, and barrels) used for raw materials and/or Waste Materials; (b) the time period during which the storage area was used; and (c) describe what was stored in each storage area.

ANSWER: The Guyon Property included a storage building, a reservoir, and above-ground oil storage tanks. Facility maps produced by EnPro Holdings, Inc. depict the locations of fuel storage tanks at the Facility (see ENPR-FED-0000000032-38, 5470-5481, and 5482, produced in this litigation by EnPro Holdings, Inc. to Plaintiff on April 19, 2019). Otherwise, EnPro Holdings, Inc. is not aware of any information regarding storage areas at the Facility.

7. For each Property at Issue identified in response to Interrogatory No. 1, Identify all catch basins, floor drains, tanks, sinks, sumps, trenches on the property, outfalls, air emissions, casualty fires, explosions, intentional dumping, and stormwater and storm sewers.

ANSWER: Passaic Valley Sewerage Commission (“PVSC”) drawings indicate that the Facility was connected to the PVSC system by the 1920s. The Facility had an underground storm drainage system, consisting of a central drainage pipe/main that discharged into the Passaic River through a box culvert. This drainage system included manholes which were routed to underground lateral pipes that conveyed storm water to the central drainage main and ultimately into the Passaic River. Only a relatively short portion of the main ran beneath the Facility.

The Guyon Property was served by a 12-inch diameter combined sewer and stormwater outfall adjacent to Frank Rodgers Boulevard (formerly South 4th Street) on the western portion of the Guyon Property. The outfall associated with the 12-inch system discharged storm and cooling water from the Guyon Property, as well as sanitary and storm water from numerous

commercial and residential properties located to the north and west of the Guyon Property, which properties were owned and/or leased by third-parties not related to EnPro Holdings, Inc. A 36-inch diameter waste water line which discharged to the culvert served the Guyon Property and other properties to the north and west, which properties were owned and/or leased by third-parties not related to EnPro Holdings, Inc., and manholes at unknown locations on the Spiegel Property. The 36-inch diameter waste water line terminates at a two-story building adjacent to the box culvert in the southwest corner of the Guyon Property, with three line connections (6-inch, 8-inch, and 12-inch lines) from the Guyon Property. There is also a 6-foot by 6-foot concrete box culvert associated with the Spiegel Property. The culvert outfall is located at the small inlet south of the Pete Higgins Boulevard and Cape May Street intersection.

8. Describe any treatment performed on Waste Material identified in response to Interrogatory No. 5 before it was disposed of.

ANSWER: EnPro Holdings, Inc. is not aware of any information regarding treatment performed on Waste Material at the Facility.

9. For each Operation identified in response to Interrogatory No. 2, Identify any environmental permits, Including without limitation air quality, water quality, waste disposal, stormwater, waste discharge, and/or operating permits.

ANSWER: EnPro Holdings, Inc. is not aware of any information regarding permits issued for the Facility during Crucible's period of ownership or operation of the Facility.

10. For each Operation identified in response to Interrogatory No. 2, Identify each Disposal Company that handled any Waste Material that contained COCs and for each such company provide: (a) the dates during which that company handled Waste Material; (b) the chemical composition of the Waste Material handled by that company; (c) the methods of

storage, handling, treatment, and disposal used by that company; and (d) the location(s) where that company disposed of the Waste Material.

ANSWER: EnPro Holdings, Inc. is not aware of any information regarding any Disposal Company that handled any Waste Material originating at the Facility.

11. For each Operation identified in response to Interrogatory No. 2, state whether any raw material, products or intermediates, or Waste Material contained any of the COCs and, if so, Identify: (a) which COC(s) it contained; (b) the raw material or Waste Material that contained the COC; and (c) the approximate quantity (by percentage and concentration) of each COC present in the raw material or Waste Material.

ANSWER: Copper may be present in steel manufacturing waste streams, and so trace quantities of copper may have been present in steel manufactured or handled at the Facility.

PAHs may be present in steel industry waste streams. Crucible used rolling oils at the Spiegel Property; these oils may have contained PAHs. Crucible transported fuel oil in fuel lines at the Facility, stored fuel oil, and used fuel oil for heating furnaces; the fuel oil may have contained PAHs. Crucible stored, handled, and used fuel oil to fire furnaces at the Facility for much of its operational period (1900-1973), although Crucible reported in 1970 that it used natural gas for heating at the Facility. The fuel oil may have contained some PAHs.

Lead may be present in steel industry waste streams. Trace quantities of lead may have been present in steel manufactured or handled at the Facility. Crucible used a lead quenching bath in the production of certain steel products at the Spaulding Works (Spiegel Property) during the early 1970s. During the quenching process lead would vaporize and as the vapors cooled lead oxide would be formed. The lead oxide was disposed of as solid waste (plant trash) off-site.

The approximate quantity of each COC, to the extent present, is unknown.

12. Identify any contracts You had with the Disposal Sites, any operator(s) of the Disposal Sites, or any party to haul Containers containing Waste Materials to the Disposal Sites and describe: (a) the chemical composition of the materials You disposed of at the Disposal Sites; (b) the time period of this disposal; and (c) the amounts of Waste Materials disposed at the Disposal Sites.

ANSWER: EnPro Holdings, Inc. is not aware of any information regarding any such contracts.

13. Identify any insurance coverage pertaining to any Property at Issue or Operations identified in response to Interrogatories Nos. 1 or 2 that is or may be available to respond to the claims at issue in this litigation and describe the coverage.

ANSWER: None.

14. Identify all of Your officers, employees, or Agents, who played a substantive role or had supervisory responsibilities pertaining to any Property at Issue or Operations identified in response to Interrogatories Nos. 1 or 2 who have or had knowledge of the ownership, history of Operations, raw materials used, products sold, by-products, waste generated and waste disposal practices for Waste Materials, discharge pathways for Waste Materials, and/or any Response Action related to any Property at Issue or Operations identified in response to Interrogatories Nos. 1 or 2 that related to COCs. For each Person identified, state their position or title, years employed or retained by You, last known address and telephone number, and the subject matter(s) about which they have knowledge.

ANSWER: Coltec interviewed two former Crucible employees in 1996 to prepare its response to U.S. EPA's CERCLA §104(e) information request: Charles Kurcina, who was Vice President and General Manager of the Facility from December 1971 through May 1973 (address

as of 1996: Pittsburgh, Pennsylvania; telephone number: 412-643-4978), and Willard E. Soper, Jr. who was General Foreman of Heat Treat and held various other positions at the Facility from June 1954 through May 1973 (address as of 1996: 104 Larned Road, Summit, New Jersey; telephone number: 908-277-4260). Additionally, contact was made with Alan Simon who was Manager of Technical Services at the Facility from November 1948 through May 1973, but an interview with Mr. Simon was never conducted. Otherwise, EnPro Holdings, Inc. has no present or former employees with knowledge of Facility operations.

15. Are You a party to any joint defense agreement(s) (whether written or unwritten) between or among You and any other Person relating to this litigation and/or any of the Properties at Issue? If so, Identify the parties to the agreement and state the date it was signed (or verbally agreed to) and became effective.

ANSWER:

Defendant is, or has been, a party to the following joint defense agreements:

a. A Lower Passaic River Study Area Site PRP Group Organization Agreement entered into on or around February 10, 2004. The members amended this Organization Agreement on or around May 24, 2004, to change their name from the Lower Passaic River Study Area Site PRP Group to the Lower Passaic River Study Area Cooperating Parties Group. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

1. Alliance Chemical, Inc.
2. Arkema Inc.
3. Ashland Inc
4. Atlantic Richfield Company
5. BASF Corporation, on its own behalf and on behalf of BASF Catalysts LLC
6. Belleville Industrial Center

7. Benjamin Moore & Company
8. Bristol Meyers Squibb
9. CBS Corporation, a Delaware corporation (f/k/a Viacom Inc., successor by merger to CBS Corporation, a Pennsylvania corporation, f/k/a Westinghouse Electric Corp.)
10. Celanese Ltd.
11. Chemtura Corporation
12. Chevron Environmental Management Company, for itself and on behalf of Texaco, Inc. and TRMI-H LLC
13. Congoleum Corporation
14. Conopco, Inc. d/b/a Unilever (as successor to CPC/Bestfoods, former parent of the Penick Corporation (facility located at 540 New York Avenue, Lyndhurst, NJ)
15. Cooper Industries LLC
16. Croda Inc.
17. Curtiss-Wright Corporation
18. DII Industries, LLC
19. DiLorenzo Properties Company on behalf of itself and The Goldman /Goldman/DiLorenzo Properties Partnerships
20. Eastman Kodak Company (NPEC, Inc.)
21. Eden Wood Company
22. E. I. du Pont de Nemours and Company
23. Elan Chemical Company
24. El Paso (EPEC Polymers, Inc. on behalf of itself and EPEC Oil Co. Liquidating Trust)
25. EnPro Holdings, Inc. (successor by merger to Coltec Industries Inc.)
26. Essex Chemical Corporation
27. Essex County Improvement Authority
28. Flexon Industries Corp.
29. Franklin-Burlington Plastics, Inc.
30. Garfield Molding Co., Inc.
31. General Electric Company
32. General Motors Corporation
33. Givaudan Fragrances
34. Goodrich Corporation on behalf of itself and Kalama Specialty Chemicals, Inc.
35. Goody Products, Inc.
36. Hercules Chemical Corp., Inc.
37. Hess Corporation, on its own behalf and on behalf of Atlantic Richfield Company
38. Hexcel Corporation
39. Hoffmann-La Roche Inc. on its own behalf, behalf of affiliate Roche Diagnostics
40. Honeywell International Inc.
41. ISP Chemicals
42. ITT Corporation
43. KAO USA, Inc.
44. Leemilt's Petroleum, Inc. (successor to Power Test of New Jersey, Inc.), on its behalf and on behalf of Power Test Realty Company Limited Partnership and Getty Properties Corp., the General Partner of Power Test Realty Company Limited Partnership

- 45. Linde LLC on behalf of The BOC Group Inc.
- 46. Lyondell/Millennium Chemicals, Inc.
- 47. Mallinckrodt
- 48. Nokia (f/k/a Lucent Technologies/Alcatel-Lucent USA Inc.)
- 49. Novelis Corporation (f/k/a Alcan Aluminum Corporation)
- 50. Otis Elevator Company
- 51. Pfizer, Inc.
- 52. Pharmacia Corporation (f/k/a Monsanto Company)
- 53. PPG Industries, Inc.
- 54. Public Service Electric and Gas Company
- 55. Purdue Pharma Technologies, Inc.
- 56. Quality Carriers, Inc. as successor to Chemical Leaman Tank Lines, Inc. and Quality Carriers, Inc.'s corporate affiliates and parents
- 57. Reichhold Holdings/Reichhold Chemicals, Inc.
- 58. Revere Smelting and Refining Corporation
- 59. Safety-Kleen Envirosystems Company by McKesson, and McKesson Corporation
- 60. Sequa Corporation
- 61. Seton Tanning
- 62. Stanley Black & Decker, Inc. (f/k/a The Stanley Works)
- 63. Sun Chemical Corporation
- 64. Tate & Lyle Ingredients Americas, Inc. (f/k/a A.E. Staley Manufacturing Company, including its former division Staley Chemical Company)
- 65. Teva Pharmaceuticals USA, Inc. (f/k/a Biocraft Laboratories, Inc.)
- 66. Teval Corporation
- 67. Textron Inc.
- 68. The Hartz Consumer Group, Inc., on behalf of The Hartz Mountain Corporation
- 69. The Newark Group
- 70. The Sherwin-Williams Company
- 71. Three County Volkswagen
- 72. Tierra Solutions (Maxus Energy Corp. & Occidental Chemical Corp.)
- 73. Tiffany and Company
- 74. Twenty-First Century Fox America (f/k/a News Publishing Australia Ltd. (successor to Chris-Craft Industries))
- 75. Vertellus Specialties (f/k/a Reilly Industries, Inc.)
- 76. Vulcan Materials Company
- 77. Wyeth on behalf of Shulton, Inc.

b. A Lower Passaic River Study Area Site Cooperating Parties Group Amended and Restated Organization Agreement entered into on or around March 19, 2007. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

1. Alliance Chemical, Inc. on behalf of itself and Pfister Chemical Inc.

2. Arkema Inc.
3. Ashland Inc.
4. Atlantic Richfield Company
5. BASF Corporation, on its own behalf and on behalf of BASF Catalysts LLC
6. Belleville Industrial Center
7. Benjamin Moore & Co.
8. Bristol-Myers Squibb
9. CBS Corporation
10. Celanese Ltd.
11. Chemtura Corporation and Raclaur, LLC as current and former owner of the property f/k/a Atlantic Industries
12. Chevron Environmental Management Company, for itself and on behalf of Texaco Inc.
13. Coats & Clark, Inc.
14. Coltec Industries
15. Conopco, Inc. d/b/a Unilever (as successor to CPC/Bestfoods, former parent of the Penick Corporation (facility located at 540 New York Avenue, Lyndhurst, NJ))
16. Covanta Essex Company
17. Croda Inc.
18. DiLorenzo Properties Company on behalf of itself and the Goldman/Goldman/DiLorenzo partnerships
19. Eden Wood Corporation
20. Du Pont Company
21. Elan Chemical Co. Inc.
22. EPEC Polymers, Inc. on behalf of itself and EPEC Oil Company Liquidating Trust
23. Equistar Chemicals LP
24. Essex Chemical Corporation
25. Flexon Industries Corp.
26. Franklin-Burlington Plastics, Inc.
27. Garfield Molding Co. Inc.
28. General Electric Co.
29. General Motors Corporation
30. Givaudan Fragrances Corp.
31. Goodrich Corporation on behalf of itself and Kalama Specialty Chemicals, Inc.
32. Hercules Chemical Company, Inc.
33. Hess Corporation, on its own behalf and on behalf of Atlantic Richfield Company
34. Hexcel Corporation
35. Hoffmann-La Roche Inc. on its own behalf and on behalf of its affiliate, Roche Diagnostics
36. Honeywell
37. ISP Chemicals LLC
38. ITT Corporation
39. Kao Brands Company
40. Leemilt's Petroleum, Inc . (successor to Power Test of New Jersey, Inc.), on its behalf and on behalf of Power Test Realty Company Limited Partnership and Getty Properties Corp., the General Partner of Power Test Realty Company Limited Partnership.
41. Lucent Technologies Inc.

42. Mallinckrodt Inc., a Delaware corporation
43. Maxus Energy Corporation
44. MHC, Inc. on behalf of itself and Walter Kidde & Company, Inc.
45. Millennium Petrochemicals, Inc. (f/k/a Quantum Chemical Corporation)
46. National-Standard, LLC
47. Newell Rubbermaid Inc., on behalf of itself and its wholly-owned subsidiaries Goody Products, Inc. and Berol Corporation (as successor by merger to Faber-Castell Corporation)
48. News Publishing Australia Ltd.
49. Novelis Corporation (f/k/a Alcan Aluminum Corporation)
50. NPEC, Inc.
51. Occidental Chemical Corporation
52. Otis Elevator Company
53. Pfizer, Inc.
54. Pharmacia Corporation (f/k/a Monsanto Company)
55. PPG Industries, Inc.
56. Public Service Enterprise Group on behalf of its affiliates
57. Purdue Pharma Technologies, Inc.
58. Quality Carriers, Inc. as successor to Chemical Leaman Tank Lines, Inc.
59. Reichhold Inc. (f/k/a Reichhold Chemicals, Inc.)
60. Revere Smelting & Refining Corporation
61. Safety-Kleen Envirosystems Company by McKesson, and McKesson Corporation for itself
62. Sequa Corporation
63. STWB Inc.
64. Sun Chemical Corporation
65. Tate & Lyle Ingredients Americas, Inc. (f/k/a A.E. Staley Manufacturing Company, including its former division Staley Chemical Company)
66. Teva Pharmaceuticals USA, Inc.
67. Teval Corp.
68. Textron Inc.
69. The BOC Group
70. The Hartz Consumer Group, Inc., on behalf of The Hartz Mountain Corporation
71. The Newark Group, Inc.
72. The Sherwin-Williams Company
73. The Stanley Works
74. Three County Volkswagen Corp.
75. Tiffany and Company
76. Tierra Solutions, Inc.
77. Vertellus Specialties Inc., f/k/a Reilly Industries, Inc.
78. Vulcan Materials Company
79. Wyeth, on behalf of Shulton, Inc.

c. A Lower Passaic River Small Parties Group (SPG) Joint Defense Agreement

entered into on or around May 9, 2008 with a Joinder Agreement and Amendment No. 1 entered

into on or around September 28, 2018. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

1. Akzo Nobel Coatings Inc.
2. Alcatel-Lucent USA
3. Alliance Chemical, Inc.
4. Arkema Inc.
5. Ashland Inc.
6. Atlantic Richfield Company
7. BASF Corporation
8. Bath Iron Works Corporation
9. Benjamin Moore & Co.
10. Canning Gumm LLC
11. CBS Corporation
12. Celanese Ltd.
13. Chemtura Corporation/Raclaur LLC
14. Chevron Environmental Management Company
15. Clean Earth of North Jersey
16. Coats & Clark Inc.
17. Coltec Industries Inc.
18. Congoleum Corporation
19. Conopco, Inc.
20. Cooper Industries LLC
21. Covanta Essex Company
22. Croda Inc.
23. DII Industries, LLC
24. DiLorenzo Properties Company on behalf of itself and the Goldman/Goldman/DiLorenzo Properties Partnership
25. DuPont Company
26. Emerald Kalama Chemical LLC
27. EPEC Polymers, Inc.
28. Essex Chemical Corporation
29. The Essex County Improvement Authority (as contractual indemnitor for Celanese's former Doremus Avenue facility)
30. Franklin-Burlington Plastics, Inc.
31. Garfield Molding Co. Inc.
32. General Electric Co.
33. Givaudan Fragrances Corporation
34. Goodrich Corporation
35. The Hartz Consumer Group, Inc.
36. Hess Corporation
37. Hexcel Corporation
38. Hoffman-LaRoche

39. Honeywell
40. ISP Chemicals LLC
41. ITT
42. Johnson & Johnson Consumer Products Inc.
43. Kalama Specialty Chemicals Inc.
44. Kao Brands Company
45. Leemilt's Petroleum, Inc.
46. Linde, Inc.
47. Mallinckrodt LLC
48. Millennium Chemicals, Inc. affiliated entities MHC, Inc. (on behalf of itself and Walter Kidde & Company, Inc.)
49. Millennium Petrochemicals, Inc. (f/k/a Quantum Chemical Corporation)
50. Equistar Chemicals LP
51. Nappwood Land Corporation
52. National-Standard
53. The Newark Group, Inc.
54. Newell Rubbermaid Inc., (on behalf of itself and its wholly-owned subsidiaries Goody Products, Inc. and Berol Corporation (as successor by merger to Faber-Castell Corporation))
55. News Publishing Australia Ltd.
56. Novelis Corporation
57. Noveon Hilton Davis, Inc.
58. The Okonite Company
59. Otis Elevator Company
60. Pabst Brewing Company, LLC
61. Pfizer Inc.
62. Pharmacia Corporation
63. PPG Industries, Inc.
64. PSEG
65. Purdue Pharma Technologies, Inc.
66. Quality Carriers, Inc. (as successor to Chemical Leaman Tank Lines)
67. Reichhold Inc.
68. Revere Smelting & Refining
69. Royce Associates, A Limited Partnership
70. RTC Properties, Inc.
71. Safety-Kleen Envirosystems Company
72. McKesson Corporation
73. Sequa Corporation
74. The Sherwin-Williams Company
75. The Stanley Works
76. STWB Inc.
77. Sun Chemical
78. Sunoco (R&M) LLC
79. Sunoco Partners, Marketing, & Terminals, L.P.
80. Tate & Lyle Ingredients Americas, Inc. (f/k/a A.E. Staley Manufacturing Company, including its former division Staley Chemical Company)

81. Teva Pharmaceuticals USA, Inc.
82. Textron Inc.
83. Three County Volkswagen
84. Tiffany & Company
85. United States Steel Corporation
86. Vulcan Materials Company
87. Wyeth, on behalf of Shulton, Inc.

d. A Third-Party Defendant Newark Bay Complex Joint Defense Agreement entered into on or around January 23, 2009 with regards to the litigation captioned *New Jersey Department of Environmental Protection v. Occidental Chemical Corporation* (Docket No. ESX-L-9868-05) in New Jersey Superior Court, Essex County. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

1. 3M Company
2. ACH Food Companies, Inc.
3. Alliance Chemical, Inc.
4. Alumax Mill Products, Inc.
5. Apexical, Inc.
6. Arkema Inc.
7. Ashland Inc. on behalf of itself and on behalf of its wholly owned holding and investment company, Ashland International Holdings Inc.
8. Associated Auto Body & Trucks, Inc.
9. BASF Corporation, on its own behalf and on behalf of BASF Catalysts, BASF Construction Chemicals and CIBA Corporation
10. Bayer Corporation
11. Beazer East, Inc.
12. Belleville Industrial Center
13. Benjamin Moore & Co.
14. Berol Corporation and Goody Products, Inc.
15. BP Marine Americas, Inc.
16. Celanese Ltd.
17. Coltec Industries
18. ConAgra Panama, Inc.
19. Conopco, Inc.
20. Consolidated Rail Corporation
21. Covanta Essex Company
22. Croda Inc.
23. CWC Industries, Inc.
24. Cytec Industries Inc.

25. Darling International, Inc.
26. Davanne Realty Co.
27. DiLorenzo Properties Company
28. Dow Chemical Company, Essex Chemical Corporation and Morton International, Inc.
29. E. I. du Pont de Nemours and Company and Pitt-Consol Chemical Company
30. Eastman Kodak Company
31. Eden Wood Corporation
32. Electric Boat / named as General Dynamics Corporation
33. EPEC Polymers, Inc.
34. Exxon Mobil Corporation
35. Fiske Brothers Refining Company
36. Flexon Industries Corp. and Thirty-Three Queen Realty, Inc.
37. Flint Group Incorporated
38. Franklin-Burlington Plastics, Inc.
39. Garfield Molding Co., Inc.
40. General Cable Industries, Inc.
41. General Electric Company
42. Givaudan Fragrances Corporation
43. Gordon Terminal Service Co. of N.J.
44. Hartz Mountain Corporation
45. Hess Corporation
46. Hexcel Corporation on behalf of itself and on behalf of Fine Organics Corporation
47. Hoffmann-La Roche Inc.
48. Honeywell International Inc. and Universal Oil Products Company
49. ICI Americas, Inc. (Akzo Nobel)
50. INNOSPEC ACTIVE CHEMICALS LLC
51. INX International Ink Co.
52. ISP Chemicals LLC
53. ITT Corporation
54. Kao Brands Company
55. KINDER MORGAN ENERGY PARTNERS, LP/GATX
56. Linde, Inc.
57. Lucent Technologies Inc. (Alcatel-Lucent USA Inc.)
58. Mallinckrodt Inc.
59. Merck & Co., Inc./Schering Corporation
60. Metal Management Northeast, Inc.
61. N L Industries, Inc.
62. National Fuel Oil, Inc.
63. National-Standard LLC
64. Nestle U.S.A., Inc.
65. News Publishing Australia Ltd. (successor to Chris-Craft Industries)
66. Novelis Corporation (f/k/a Alcan Aluminum Corporation)
67. Otis Elevator Company
68. Pfizer, Inc.; American Cyanamid Company (now known as Wyeth Holdings Corporation), Wyeth (now known as Wyeth LLC), and Shulton, Inc., solely as to allegations in Third Party Complaint D related to the Clifton, NJ facility

69. Pharmacia Corporation
70. Phelps Dodge Industries, Inc.
71. Power Test Realty Company Limited Partnership and Getty Properties Corp., the General Partner of Power Test Realty Company Limited Partnership
72. PPG Industries, Inc.
73. Praxair, Inc.
74. PRC-Desoto International, Inc.
75. Prysmian Communications Cables and Systems USA LLC
76. Public Service Electric and Gas Company
77. Purdue Pharma Technologies, Inc. and Nappwood Land Corporation
78. Quality Carriers, Inc., and Quala Systems, Inc.
79. Reichhold Chemicals, Inc.
80. Revere Smelting & Refining Corporation
81. Roman Asphalt Corporation
82. Safety-Kleen Envirosystems Company by McKesson, and McKesson Corporation for itself
83. Sequa Corporation
84. Stanley Black & Decker, Inc. (The Stanley Works)
85. Sun Chemical Corporation
86. Sunoco, Inc. (R&M) f/k/a Sun Refining & Marketing Co., Sunoco, Inc. f/k/a Sun Oil Co., and Sun Pipe Line Company improperly identified as Sun Pipeline Co
87. Tate & Lyle Ingredients Americas, Inc.
88. Teva Pharmaceuticals USA, Inc. (f/k/a Biocraft Laboratories, Inc.)
89. Textron Inc.
90. The Dial Corporation
91. The Newark Group
92. The Procter & Gamble Manufacturing Company
93. The Sherwin-Williams Company
94. The Valspar Corporation
95. Three County Volkswagen
96. Tiffany & Co.
97. TRMI-H LLC
98. Troy Chemical Corporation, Inc.
99. Vertellus Specialties Inc. f/k/a/ Reilly Industries, Inc.; Rutherford Chemicals LLC
100. Vulcan Materials Company
101. Waste Management, Inc. (Chemical Waste Management, Inc.)
102. Zeneca, Inc.

e. A Confidential Common Interest Agreement entered into on or around March 11, 2014. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

1. 21 Century Fox America, Inc.
2. Arkema Inc.
3. Ashland Inc.
4. Alcatel-Lucent USA Inc.
5. BASF Catalysts, LLC
6. BASF Corporation
7. Belleville Industrial Center
8. Benjamin Moore & Co.
9. BP America Inc., on behalf of BP Products North America Inc. and Atlantic Richfield Company
10. CBS Corporation
11. Celanese Ltd.
12. Chevron Environmental Management Company for itself and on behalf of Texaco Inc. and TRMI-H LLC
13. Coats & Clark Inc.
14. Coltec Industries Inc.
15. Conopco, Inc. d/b/a Unilever (as successor to CPC/Bestfoods, former parent of the Penick Corporation)
16. Cooper Industries, LLC
17. Covanta Essex Company
18. Croda, Inc.
19. DiLorenzo Properties Company on behalf of itself and Goldman/Goldman/DiLorenzo Partnerships
20. DII Industries, LLC
21. E.I. du Pont de Nemours and Company
22. Elan Chemical Company Inc.
23. EPEC Polymers, Inc.
24. Essex Chemical Corporation
25. Exelis Inc. for itself and ITT Corporation
26. Flexon Industries Corporation
27. Franklin-Burlington Plastics, Inc.
28. Garfield Molding Co., Inc.
29. General Electric Co.
30. Givaudan Fragrances Corporation
31. The Hartz Consumer Group, Inc.
32. Hess Corporation
33. Hexcel Corporation
34. Hoffmann-LaRoche Inc.
35. Honeywell International Inc.
36. ISP Chemicals LLC
37. KAO USA Inc.
38. Leemilt's Petroleum, Inc.
39. Legacy Vulcan Corporation (f/k/a Vulcan Materials Company)
40. Linde (f/k/a The BOC Group)
41. Mallinckrodt LLC
42. McKesson/Safety-Kleen

- 43. National-Standard, LLC
- 44. The Newark Group
- 45. Newell Rubbermaid Inc., on behalf of itself and its wholly-owned subsidiaries Goody Products, Inc. and Berol Corporation (as successor by merger to Faber-Castell Corporation)
- 46. Novelis Corporation
- 47. Otis Elevator Company
- 48. Goodrich Corporation
- 49. Pfizer Inc.
- 50. Pharmacia LLC
- 51. PPG Industries, Inc.
- 52. Public Services Enterprises Group Incorporated on behalf of its affiliates
- 53. Purdue Pharma Technologies Inc.
- 54. Quality Carriers, Inc.
- 55. Reichhold Inc.
- 56. Revere Smelting & Refining
- 57. Sequa Corporation
- 58. Seton Company
- 59. The Sherwin-Williams Company
- 60. Stanley Black & Decker Inc.
- 61. STWB Inc.
- 62. Sun Chemical Corporation
- 63. Tate & Lyle Ingredients Americas LLC
- 64. Textron Inc.
- 65. Teva Pharmaceuticals USA, Inc.
- 66. Three County Volkswagen
- 67. Tiffany and Company
- 68. Wyeth on behalf of Shulton, Inc.

f. A Joint Defense Agreement entered into on or around August 15, 2018 related to the Diamond Alkali Superfund Site Small Parties Litigation Group. The membership of the group was amended and supplemented over time as parties joined and left the group. The following entities are current or former parties to this joint defense agreement:

- 1. 21st Century Fox America, Inc.
- 2. Akzo Nobel Coatings Inc.
- 3. Arkema Inc.
- 4. Ashland LLC
- 5. Atlantic Richfield Company
- 6. BASF Corporation (on its own behalf and on behalf of BASF Catalysts LLC)
- 7. Bath Iron Works Corporation
- 8. Benjamin Moore & Co.
- 9. Canning Gumm LLC

10. CBS Corporation
11. Clean Earth of North Jersey, Inc.
12. CNA Holdings LLC (by and through its indemnitor Essex County Improvement Authority)
13. Coats & Clark Inc.
14. Conopco, Inc., d/b/a Unilever (as successor to CPC/Bestfoods, former parent of Penick Corporation)
15. Cooper Industries, LLC
16. Covanta Essex Company
17. Croda, Inc.
18. DII Industries, LLC
19. E. I. du Pont de Nemours and Company (on its own behalf and on behalf of Pitt-Consol Chemical Company)
20. EnPro Holdings, Inc. (successor to Coltec Industries Inc.)
21. Essex Chemical Corporation
22. Franklin-Burlington Plastics, Inc.
23. Garfield Molding Company, Inc.
24. General Electric Company
25. Givaudan Fragrances Corporation
26. Kalama Specialty Chemicals, Inc.
27. Noveon Hilton Davis, Inc.
28. Emerald Kalama Chemical, LLC
29. Goodrich Corporation on behalf of itself, Kalama Specialty Chemicals, Inc., Emerald Kalama Chemical, LLC, and Noveon Hilton Davis, Inc.
30. Harris Corporation for itself and as successor in interest by merger to Exelis Inc., successor in interest to ITT Corporation, Avionics Division
31. Hexcel Corporation
32. Hoffman-LaRoche Inc.
33. Honeywell International Inc.
34. ISP Chemicals LLC
35. Johnson & Johnson
36. Leemilt's Petroleum, Inc.
37. Legacy Vulcan, LLC
38. Mallinckrodt LLC
39. MI Holdings, Inc.
40. Nappwood Land Corporation
41. National-Standard, LLC
42. Newell Brands Inc. (f/k/a Newell Rubbermaid Inc.) on behalf of itself and its subsidiaries Goody Products, Inc. and Berol Corporation (as successor by merger to Faber-Castell Corporation)
43. Nokia of America Corporation
44. Novartis Corporation
45. Novelis Corporation (f/k/a Alcan Aluminum Corp.)
46. Otis Elevator Company
47. Pabst Brewing Company, LLC
48. Pharmacia LLC

49. PPG Industries, Inc.
50. Public Service Electric & Gas Company (PSE&G)
51. Purdue Pharma Technologies, Inc.
52. Quala Systems, Inc.
53. Quality Carriers, Inc.
54. Revere Smelting & Refining Corporation
55. Royce Associates, A Limited Partnership
56. RTC Properties, Inc.
57. Safety-Kleen Envirosystems Company, by McKesson Corporation and McKesson Corporation for itself
58. Sequa Corporation
59. Stanley Black & Decker, Inc.
60. STWB Inc.
61. Sun Chemical Corporation
62. TPL Management Operations, a series of Evergreen Resources Group, LLC on behalf of itself and Sunoco (R&M), LLC and Sunoco Partners Marketing & Terminals L.P.
63. Tate & Lyle Ingredients Americas LLC
64. Textron Inc.
65. The Hartz Consumer Group (as successor to certain liabilities of The Hartz Mountain Corporation)
66. The Newark Group, Inc.
67. The Okonite Company, Inc.
68. The Sherwin-Williams Company
69. Tiffany & Company
70. United States Steel Corporation

g. A Joint Defendant Agreement entered into on or around March 6, 2009 with regards to the litigation captioned *New Jersey Department of Environmental Protection v. Occidental Chemical Corporation* (Docket No. ESX-L-9868-05) in New Jersey Superior Court, Essex County. The entities that have been parties to this joint defense agreement include:

1. Bayonne Industries
2. Campbell Foundry Company
3. CasChem, Inc.
4. CBS Corporation
5. Clean Earth of North Jersey, Inc.
6. Coltec Industries Inc.
7. Como Textile Prints, Inc.
8. Cosan Chemical Corporation
9. CS Osborne & Co.
10. Curtiss-Wright Corporation
11. Deleet Merchandising Corporation
12. Elan Chemical Company, Inc.

13. Eden Wood Corporation
14. Hilton Davis Chemicals, Co. (Goodrich Corporation)
15. EM Sergeant Pulp & Chemical Co.
16. FER Plating, Inc.
17. GenTek Holding LLC
18. GJ Chemical Co., Inc.
19. Kalama Specialty Chemicals Inc. (Goodrich Corporation)
20. Harrison Supply Company
21. Hexion Specialty Chemicals Inc. (k/n/a Momentive Specialty Chemicals Inc.)
22. IMTT-Bayonne
23. ISP Chemicals LLC
24. Kearny Smelting & Refining Corp.
25. Mace Adhesives (defunct company)
26. Miller Environmental
27. Norpak Corporation
28. Orange and Rockland Utilities, Inc.
29. Passaic Pioneers Properties Company
30. PhilBro, Inc.
31. Pivotal Utility Holdings
32. Precision Manufacturing Group, LLC
33. Prentiss Incorporated
34. RT Vanderbilt Company, Inc.
35. Seton Company
36. Siemens Water Technologies Corp.
37. Spectraserv, Inc.
38. Superior MPM LLC
39. Teval Corp.
40. Thomas & Betts Corp.
41. Veolia ES Technical Solutions, LLC
42. Vitusa Corp.
43. Wiggins Plastics, Inc.

EnPro Holdings, Inc., either individually and/or as a member of an above-listed group, is currently or has previously shared information and/or communications with others based on certain non-written common interest arrangements with other entities and/or groups.

16. Identify and describe all litigations, arbitrations, mediations, or settlements in which You have been involved relating to any Property at Issue or Operations identified in response to Interrogatories Nos. 1 or 2 that pertained in any way to the COCs, Identify the outcome of those proceedings, and Identify where Documents related to those proceedings are stored.

ANSWER: The PVSC filed a civil action against Crucible in 1970 related to a discharge of oily waste from the box culvert to the bank of the Passaic River. The eventual outcome of the proceeding was that Crucible was determined not to be the source of the oily waste.

EnPro Holdings, Inc. further states that it was involved in litigation styled *New Jersey Department of Environmental Protection v. Occidental Chemical Corporation* (Docket No. ESX-L-9868-05) in New Jersey Superior Court, Essex County, which was resolved by settlement. Documents related to that litigation in EnPro Holdings, Inc.'s possession, custody, or control are stored in EnPro Holdings, Inc.'s and its legal counsel's files.

EnPro Holdings, Inc. also entered into a Section 122(h) Agreement for payment of response costs in the Matter of the Lower Passaic River Study Area portion of the Diamond Alkali Superfund Site In and About Essex, Hudson, Bergen and Passaic Counties, New Jersey (U.S EPA Region 2, CERCLA Doc. No. 02-2004-2011). Documents in EnPro Holdings, Inc.'s possession, custody or control relating to this 122(h) Agreement are subject to attorney-client, work product, settlement, and other applicable privileges. Plaintiff has access to the agreement.

EnPro Holdings, Inc. also entered into an Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study for the Lower Passaic River Study Area portion of the Diamond Alkali Superfund Site In and About Essex, Hudson, Bergen and Passaic Counties, New Jersey (U.S EPA Region 2, CERCLA Doc. No. 02-2007-2009). Documents in EnPro Holdings, Inc.'s possession, custody or control relating to this ASAOC are subject to attorney-client, work product, settlement, and other applicable privileges. Plaintiff has access to the Order.

EnPro Holdings, Inc. also entered into an Administrative Settlement Agreement and Order on Consent for Removal Action for the Lower Passaic River Study Area portion of the

Diamond Alkali Superfund Site In and About Essex, Hudson, Bergen and Passaic Counties, New Jersey (U.S. EPA Region 2, CERCLA Docket No. 02-2012-2015). Documents in EnPro Holdings, Inc.'s possession, custody or control relating to this ASAOC are subject to attorney-client, work product, settlement, and other applicable privileges. Plaintiff has access to the Order.

EnPro Holdings, Inc. is also involved in the ongoing EPA Allocation proceeding conducted by David Batson. The EPA Allocation has not yet concluded. Documents in EnPro Holdings, Inc.'s possession, custody or control relating to the EPA Allocation are subject to attorney-client, work product, settlement, and other applicable privileges and the Diamond Alkali Superfund Site OU2 Allocation Confidentiality Agreement.

17. Identify the dates and describe the nature and results of any soil, groundwater, surface water, stormwater, sediment, wastewater, or other site media sampling that relates to COCs on any Property at Issue identified in response to Interrogatory No. 1 or in the Passaic River.

ANSWER: Sampling and remediation-related documentation has been produced by EnPro Holdings, Inc. (see ENPR-FED-000000056-102, 103-133, 134-237, 238-252, 301-314, 315-322, 323-330, 331-525, 526-643, 644-769, 770-775, 776, 777-931, 932, 934, 935-957, 958-1091, 1092-1093, 1262-1334, 1335-1617, 1770-2097, 2098-3747, 3748-3749, 3750, 3751-3752, 3753-3754, 3757, 3758, 3759, 3760-3769, 3770-3895, 3896, 3897-3926, 3927-3995, 3996-4121, 4122-4258, 4259-4285, 4286-4480, 4481-4492, 4503-4513, 4514-4533, 4534-4573, and 4574-4580, produced in this litigation by EnPro Holdings, Inc. to Plaintiff on April 19, 2019). In addition, EnPro Holdings, Inc. attaches and incorporates by reference Exhibit A, which identifies sampling relating to COCs conducted in the Passaic River on behalf of the Cooperating Parties Group.

18. For any Property at Issue identified in response to Interrogatory No. 1, Identify and describe any Response Action that has occurred on that location.

ANSWER: EnPro Holdings, Inc. objects to this Interrogatory on the basis of relevance and as overly broad because it seeks information that has no bearing on the issues in this litigation, including information regarding Response Actions that did not involve discharges of COCs to the portions of the Passaic River at issue in Plaintiff's Complaint. Subject to and without waiving such objections, from 2006-2010, the Spiegel Property portion of the Facility was redeveloped into the Red Bull Soccer Stadium by the Harrison Township Redevelopment Agency. Sampling investigations and remediation activities were conducted as part of the redevelopment. Sampling and remediation-related documentation has been produced by EnPro Holdings, Inc. (see ENPR-FED-000000056-102, 103-133, 134-237, 238-252, 301-314, 315-322, 323-330, 331-525, 526-643, 644-769, 770-775, 776, 777-931, 932, 934, 935-957, 958-1091, 1092-1093, 1262-1334, 1335-1617, 1770-2097, 2098-3747, 3748-3749, 3750, 3751-3752, 3753-3754, 3757, 3758, 3759, 3760-3769, 3770-3895, 3896, 3897-3926, 3927-3995, 3996-4121, 4122-4258, 4259-4285, 4286-4480, 4481-4492, 4503-4513, 4514-4533, 4534-4573, and 4574-4580, produced in this litigation by EnPro Holdings, Inc. to Plaintiff on April 19, 2019).

19. For any Property at Issue identified in response to Interrogatory No. 1, Identify and describe any major capital improvements and/or major changes to the footprint of the property.

ANSWER: See EnPro Holdings, Inc.'s response to Interrogatory No. 3, above.

20. Identify all complaints, Communications, or notices by any governmental agency or other Persons concerning any alleged release or disposal of COCs at or from each Property at Issue or Operations identified in response to Interrogatory Nos. 1 or 2.

ANSWER: The PVSC filed a civil action against Crucible in 1970 related to a discharge of oily waste from the box culvert to the bank of the Passaic River. The eventual outcome of the proceeding was that Crucible was determined not to be the source of the oily waste. Defendant further states that it was a party in litigation styled *New Jersey Department of Environmental Protection v. Occidental Chemical Corporation* (Docket No. ESX-L-9868-05) in New Jersey Superior Court, Essex County, which was resolved by settlement.

21. Identify or describe Your document retention and destruction polic(ies) relating to the retention or destruction of business records relating to each Property at Issue or Operations identified in response to Interrogatory Nos. 1 or 2.

ANSWER: EnPro Holdings, Inc. has no knowledge regarding the document retention and/or destruction policies pertaining to business records relating to the Facility, except that EnPro Holdings, Inc. has no business records regarding Facility operations since Crucible's period of ownership and operation of the Facility ceased in 1973.

22. Identify all Response Action costs for which You seek recovery in this litigation and for each, describe the purpose for which those costs were spent and what documentation You have establishing that You incurred and paid those costs.

ANSWER: EnPro Holdings, Inc. objects to this Interrogatory as premature because no counterclaims or third-party claims have been asserted in this litigation and because the pending motions to dismiss will impact the type and scope of costs at issue. EnPro Holdings, Inc. reserves the right to supplement this response as necessary.

23. Identify and Describe all settlements related to claims for environmental liability pertaining to any Property at Issue or Operations identified in response to Interrogatories Nos. 1 or 2 with non-parties (including, but not limited to Defendants voluntarily dismissed from the

current litigation and governmental entities) regarding any Properties at Issue.

ANSWER: Defendant entered into a settlement with the State of New Jersey in *New Jersey Department of Environmental Protection v. Occidental Chemical Corporation* (Docket No. ESX-L-9868-05) (New Jersey Superior Court, Essex County).

24. Identify any property or facility, other than a Property at Issue, located within the Lower Passaic River Study Area as depicted in Attachment 1, at which You conducted Operations.

ANSWER: None.

Dated: July 1, 2019

Respectfully submitted,

/s/ Phillip R. Bower

Phillip R. Bower

Megan P. Caldwell*

HUSCH BLACKWELL LLP

190 Carondelet Plaza, Ste. 600

St. Louis, MO 63105

Telephone: 314.480.1500

Facsimile: 314.480.1505

E-mail: Phillip.Bower@huschblackwell.com

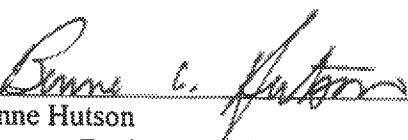
Counsel for Defendant EnPro Holdings Inc.

**Pro hac admission*

VERIFICATION

COUNTY OF MECKLENBURG)
)ss.
STATE OF NORTH CAROLINA)

I, Benne Hutson, as Director, Environmental, and Deputy General Counsel of EnPro Holdings, Inc., state that I have knowledge of the facts contained in Defendant EnPro Holdings, Inc.'s Answers and Objections to Standard Set of Interrogatories to be Answered by Plaintiff and Defendants. The answers are true to the best of my knowledge, information and belief.



Benne Hutson
Director, Environmental, and Deputy General Counsel

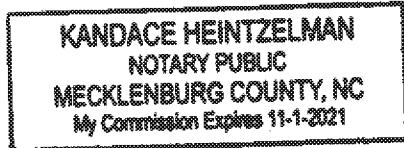
Subscribed to before me this 16th day of July 2019 by Benne Hutson as Director, Environmental, and Deputy General Counsel of EnPro Holdings, Inc.

WITNESS my hand and official seal.



Notary Public

My commission expires: 11/01/2021



CERTIFICATE OF SERVICE

I hereby certify that on this 1st day of July, 2019, the foregoing was served via electronic service upon Occidental Chemical Corporation through its counsel of record, and upon all defendants through their defense liaison counsel of record.

/s/ Phillip R. Bower _____

Exhibit A

Summary of Sediment Datasets for the Lower Passaic River Study Area Remedial Investigation

Data Collection Event	Date of Collection	Number of Samples/ Locations ^a	Location (RM)	Depth (feet)	Sample Type	Analyses	Level of Validation	Known Data Issues or Limitations
Tierra – 1995 Remedial Investigation Sampling Program	1995	97 locations; 211 surface samples and 1,493 subsurface samples ^b	1 to 6.7	0 to 18.2	Core	Metals, PCBs, pesticides, IPH, PCDDs/PCDFs, SVOCs, herbicides, VOCs, cyanide, and geochemistry	Unknown	
Honeywell International Sampling Programs	1999 to 2006	245 cores; 916 samples; 14 sediment trap samples	-3.3 to 1	0 to 27.4	Core, grab, and sediment trap	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Unknown	No documentation
Tierra – Ecological Sampling Plan Programs	1999 to 2001	78 locations; 78 samples	1 to 7	0 to 0.5	Grab	AV/SSEM, cyanide, PCDD/PCDFs, grain size, herbicides, metals, organotin, PAH, PCB properties, SVOCs, TOC, and IPH	None known	
USEPA/BioGenesis – Sediment Collection Program	2000	1 location; 1 sample		0 to 5.5	Core	AV/SSEM, cyanide, PCDD/PCDFs, grain size, herbicides, metals, organotin, PAH, PCB congeners, PCBs, pesticides, physical properties, SVOCs, TOC, and IPH	Unknown	Limited study; single bulk sediment sample
USEPA/IAMS/Earth Tech – Sediment Coring for Dredging Pilot Project	July 2004	16 locations; 46 samples	2.6 to 3.1; cores from RM 2.9	0 to 4	Core	VOCs, SVOCs, pesticides, PCB Aroclors, PCB congeners, herbicides, PCDDs, metals, TOC, percent moisture, percent solids, Alterberg limits, specific gravity, and grain size	None known	
USEPA/MPI – Geotechnical Sediment Cores	May 2005	51 locations; 51 samples	0 to 16 (3 cores per transect every mile)	0 to 30.5	Core	Grain size (sieve and hydrometer analysis), Alterberg limits, bulk density, and TOC	None known	
USEPA/MPI – Surface Sediment Grab Sampling Program	August to September 2005	34 samples	1 to 17.4 plus Dundee Lake	0 to 0.08	Grab	Beryllium-7 and cesium-137 analyses to investigate potential high-resolution coring locations in order to help date sediment deposition	Full	None known
USEPA/MPI – High-Resolution Sediment Coring Program	September to October 2005	14 locations; 1,323 samples	1.1 to 12.6 (for 5 cores with most analyses)	0 to 22.7	Core	14 stations analyzed for radiological dating (cesium-137); select core segments from a subset of five stations also analyzed for TAL metals; PAHs, PCB congeners, PCDDs, and pesticides; approximately 516 samples analyzed for cesium-137; 228 samples analyzed for metals; 148 samples analyzed for PAHs; and 109 samples analyzed for PCB congeners and PCDDs	Full	None known
PSEG West End Supplemental RI Phase I/Phase II (NBSA Remedial Investigation)	2005	24 locations; 51 samples		0 to 1	Core and grab	Metals, SVOCs, VOCs, pesticides, and PCBs	Unknown	No documentation
Tierra – Newark Bay Sampling Program	2005 and 2007	98 cores; 21 grabs	-9.3 to 0	0 to 29.5	Core and grab	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Full	Outside of Lower Passaic River Study Area
Peninsula Resources – HRSA RI Sampling Program	2006	56 locations; 198 samples		0 to 12	Core	AV/SSEM, cyanide, PCDD/PCDFs, grain size, herbicides, hexavalent chromium, metals, PCB congeners, PCB Aroclors, pesticides, physical properties, SVOCs, TOC, IPH, VOCs, and radiochemistry	Full	None known
USEPA/MPI – Low-Resolution Sediment Coring Program	January 2006	10 locations; 130 samples	2.9 to 6.7	0 to 15.4	Core	Cesium-137, herbicides, IPH, TOC, geotechnical parameters, metals, PAHs, PCB congeners, PCB Aroclors, PCDDs, pesticides, VOCs, and SVOCs	Full	None known

Summary of Sediment Datasets for the Lower Passaic River Study Area Remedial Investigation

Data Collection Event	Date of Collection	Number of Samples/ Locations ^a	Location (RM)	Depth (feet)	Sample Type	Analyses	Level of Validation	Known Data Issues or Limitations
USEPA/NPL – Dundee Lake High-Resolution Coring Program	January 2007	6 locations; 120 samples	Dundee Lake	0 to 3	Core	Radiochemical dating analysis, PCDDs, PCB congeners, PAHs, pesticides, geo-technical parameters, and TAL metals	Full	None known
USEPA/NPL – EMBM	2007–2008	63 cores; 88 samples	1 to 18.4	0 to 9	Core	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Full	None known
USEPA/NPL – Supplemental Coring Program	December 2007 to January 2008	32 surface grabs; 20 cores (40 core samples)	1 to 12.6 and Dundee Lake (for surface grabs); 4 to 14.5 (for cores)	0 to 9	Core and grab	Surface grabs analyzed for metals, TOC, grain size, and radiological parameters (surface grabs with confirmed beryllium 7 also analyzed for PCDDs, PCB congeners, PAHs, and pesticides); core samples analyzed for PCDDs, PAHs, pesticides, metals, TOC, PCB Aroclors, grain size, and radiological dating (12 core samples also analyzed for PCB congeners)	Full	None known
USEPA/NPL – RM 0 to RM 1 Surface Sediment Sampling	June 2008	18 stations; 36 samples	0 to 1	0 to 0.5	Grab	Radiochemical parameters, TOC, TAL metals, PCDDs, PCB congeners, PAHs, pesticides, and grain size	Full	None known
Low-Resolution Coring Program	July to December 2008	111 locations; 1,398 samples	0 to 17.4 ^c	0 to 30 ^e	Core and grab	PCDDs/PCDFs, radiological dating, herbicides, pesticides, SVOCs, VOCs, metals, organotins, low-resolution mercury and methylmercury, PCB congeners, PCB Aroclors, grain size, TOC, cyanide, sulfide, TPH, PAHs, AV/SSEM, physical testing, and nitrogen/ammonia	Full	None known
Givaudan Sediment Sampling (prior to Lister Avenue Phases 1 and 2 Sediment Removal Action)	2012	6 locations; 66 samples	2.8 to 3.5	0 to 7	Core	Cesium-137	Full	None known
Benthic Program Surface Sediment and SQI Sampling (2009)	October to November 2009	111 locations (9 for SQI); 111 samples	0 to 17.4	0 to 0.5	Grab	Metals, SEM metals, butyltins, PAHs, SVOCs, PCB Aroclors, PCB congeners, PCDDs/PCDFs, organochlorine pesticides, herbicides, VOCs, TP, TOC, grain size, percent moisture, and general chemistry (i.e., AV/S, ammonia, cyanide, Kjeldahl nitrogen, phosphorus, and total sulfide)	Full	None known
Benthic Program Surface Sediment Sampling (2010)	August 2010	21 locations; 21 samples	0 to 17.4 (at locations where small forage fish were collected)	0 to 0.5	Grab	Metals, SEM metals, butyltins, PAHs, SVOCs, PCB Aroclors, PCB congeners, PCDDs/PCDFs, organochlorine pesticides, herbicides, VOCs, TP, TOC, grain size, percent moisture, and general chemistry (i.e., AV/S, ammonia, cyanide, Kjeldahl nitrogen, phosphorus, and total sulfide)	Full	None known
JDG -Sediment Sampling (prior to Lister Avenue Phases 1 and 2 Sediment Removal Action)	January 2011 to February 2011	3 high-resolution cores, 12 low-resolution cores; approximately 249 samples	2.8 to 3.5	0 to 18.5	Core	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Full	None known
River Mile 10.9 Characterization	August 2011 to November 2011	54 cores; 818 samples	10.7 to 11.1	0 to 15.9	Core	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Full	None known
Tierra – Focused Sediment Investigation (RM 10.9)	January 2012	6 cores; 70 samples	7.8 to 11.5	0 to 7	Core	PCDDs/PCDFs	Full	None known

Summary of Sediment Datasets for the Lower Passaic River Study Area Remedial Investigation

Data Collection Event	Date of Collection	Number of Samples/ Locations ^a	Location (RM)	Depth (feet)	Sample Type	Analyses	Level of Validation	Known Data Issues or Limitations
Low-Resolution Coring Program Supplemental Sampling Program	January to February 2012	85 locations; 569 samples; 755 geochronology samples	0 to 13	0 to 2.5; 3 stations to 4.5	Core and grab	PCDDs-/PCDFs, pesticides, SVOCs, metals, organotins, low-resolution mercury, PCB congeners, grain size, TOC, cyanide, sulfide, TPH, PAHs, AVS/SEM, nitrogen ammonia, beryllium-7, cesium-137, lead-210, and potassium-40	Full	None known
River Mile 10.9 Adendum A	May 2012	15 cores; 59 samples	10.8 to 11.2	0 to 6.1	Core	Metals, PCBs, pesticides, PAHs, PCDDs/PCDFs, SVOCs, herbicides, VOCs, and TOC	Full	None known
Freshwater Reference SOT and Background Sediment Study	November 2012	24 SQI and 16 chemistry-only surface samples	17.6 (above Dundee Dam) to 21	0 to 0.5	Grab	Metals, SEM metals, butyltins, PAHs, SVOCs, PCB congeners, PCDDs-/PCDFs, organochlorine pesticides, TPH, TOC, grain size, percent moisture, and general chemistry (i.e., AVS, ammonia, cyanide, Kjeldahl nitrogen, phosphorus, and total sulfide)	Full	None known
Low-Resolution Coring Program Supplemental Sampling Program 2	September to October 2013	76 locations; 664 samples; 26 geochronology samples	7.2 to 14.6	0 to 20 ^d	Core (58) and grab (73)	PCDDs-/PCDFs, pesticides, SVOCs, metals, organotins, low-resolution mercury and methylmercury PCB congeners, grain size, TOC, cyanide, sulfide, TPH, PAHs, AVS/SEM, and ammonia; cesium-137 and lead-210 at two locations	Full	None known

Notes:

Sources consulted to compile the information presented in the table include: Terra Solutions, Inc. (2003, 2014), Battelle (2005), The Louis Berger Group (2014), and publicly available websites and databases (e.g., surpassair.org).

a. Numbers are approximate and may vary depending on how quality assurance samples were counted.

b. Surface samples are those taken within the top 0.5 foot of sediment (includes high vertical resolution geochemistry samples).

c. Samples from above Dundee Dam, Third River, Second River, Second River, an unnamed tributary, and former Dundee Canal, including Weasel Brook, were also included in this sample count.

d. Cores were collected to refect a parent material; maximum core length was 30 feet. Grabs were collected to 0.5 feet.

EMBM: Equilibrium Mass Balance Model

HRSA: Hackensack River Study Area

JDG: Joint Defense Group

MP: Malcolm Pirnie, Inc.

NBSA: Newark Bay Study Area

PAH: polycyclic aromatic hydrocarbon

PCB: polychlorinated biphenyl

PCDD: polychlorinated dibenz-p-dioxin

PCDF: polychlorinated dibenzofuran

PSEG: Public Service Enterprise Group

RT: Remedial investigation

RM: River Mile

SCF: Sediment Quality Triad (chemistry, toxicity, and benthic invertebrate community)

SVOC: semivolatile organic compound

TAL: target analyte list

Tier1: Terra Solutions, Inc.

TOC: total organic carbon

TPH: total petroleum hydrocarbon

USPA: U.S. Environmental Protection Agency

VOC: volatile organic compound

Summary of Surface Water and CSO Datasets for the Lower Passaic River Study Area Remedial Investigation

Surface Water	Date of Collection	Number of Samples ^a	Location (RM)	Sample Type	Analyses	Level of Validation	Known Data Issues or Limitations
NJDEP/USGS - NJRWP/CARP	June 22, 2000; December 15, 2000; March 14, 2001; and October 17, 2001	4 samples (2 baseflow, 1 variable flow, and 1 stormflow)	Passaic River at Little Falls (adjacent to USGS gage station 01389500)	Large volume and TOPS sampling	Water: SSC, DOC, POC, specific conductance; water and solids: PCB congeners, PCDD/PCDF congeners, pesticides, PAHs, cadmium, lead, mercury, and methyl-mercury	Unknown	Upstream of Lower Passaic River Study Area; limited temporal coverage
MPI - Hydrodynamic Survey (Mooring) Water Column Sampling	November 2004 and February 2005	3 locations; 26 samples	8.6, 10, and 11.5	Grab	Grab samples collected to supplement hydrodynamic data from moored instruments; samples analyzed for POC, TDS, TOC, TSS, and VSS	Full	None known
USEPA/MPI - High-Flow Event Sampling	October 12, 2005	2 locations; 143 samples	Jackson St. and Ackerman Ave. Bridges	Grab	One-day sampling event to evaluate solids transport during a major precipitation event; samples analyzed for TDS, TOC, TSS, and VSS	Full	Limited temporal scale
USEPA/MPI - Large-Volume Water Column Sampling	October 2005	1 location; 12 samples	2.5	Large volume	PCB congeners, PCDDs, pesticides, TSS, DOC, and POC	Partial	Comparison study to evaluate TOPS, Infiltrix, and other large-volume sampling techniques; summary narrative available
MPI - SPMD Deployment	October 1 to November 2005	4 locations; 8 samples	17-3 tributaries ^b	Composite	SPMD deployments intended to measure dissolved-phase organics; extracts analyzed for PCB congeners, PAHs, PCDDs, and pesticides	Partial	Semi-quantitative, indirect measure of dissolved phase hydrophobic chemicals
MPI - Small-Volume Water Column Sampling	November 2005	8 locations; 267 samples	1, 2.5, 4.5, 10.5, 17, and 3 tributaries ^b	Grab and composite	Grabs analyzed for ammonia, BOD, herbicides, chlorophyll-a, COD, cyanide, ortho-phosphorus and total phosphorus, TKN, TSS, SVOCs, and VOCs; composites analyzed for DOC, POC, and metals	Partial	None known
U.S. Geological Survey - Surface Water Sampling for Environmental Dredging Pilot	December 2005	1 location	Harrison Reach between 2.6 and 3.0	Grab, Isco, TOPS, and composite	TSS, POC, DOC, chloride/bromide, dissolved and total metals, PCDD/PCDF congeners, and pesticides	Unknown	Limited to the Harrison Reach area with one location in the Lower Passaic River Study Area
Chemical Water Column Monitoring Program - Small Volume	August 2011 to June 2013 (8 phases of field work)	9 locations, 8 events; 756 samples	0 to 17.4, Dundee Lake, Third River, Second River, and Saddle River	Grab	PCDD/PCDFs, PCBs (homologs and congeners), mercury (total and dissolved), TAI metals (total and dissolved), POC, DOC, hardness, SSC, TOC, chlorophyll-a, alkalinity, sulfate, total sulfide, TDS, chloride, PAHs and alkylated PAHs, organochlorine pesticides (not including toxaphene) SVOCs, VOCs, methyl mercury (total and dissolved), titanium, butyltins, cyanide hexavalent chromium (dissolved only), TKN, ammonia and total phosphorous, pathogens and bacteria	Partial	None known
Chemical Water Column Monitoring Program - High Volume	December 2012 to June 2013 (2 phases of field work)	7 locations, 2 sampling rounds; 6 samples	4.2, 10.2, and Dundee Lake	Grab	PCDD/PCDFs, PCBs, SSC, POC, and DOC	Full	None known
Physical Water Column Monitoring Program	October 2009 to November 2010	6	0 to 13.5, Dundee Lake	Moorings transect surveys and grab samples	SSC, DOC/POC, optical backscatter (OBS), DO, temperature, conductivity, and depth	Partial	None known
Dissolved Oxygen Study	August to December 2012	13	0.7, 2.1, 2.3, 4.2, 5.5, 8.8, 9.0, 9.6, 12.8, 14.7, 14.7, 17.7, and 18.3	Moorings	DO, temperature, pH, conductivity, and turbidity	Unvalidated	None known
CSOs							
Tierra Solutions, Inc. – CSO Sampling Program	September to November 1997	11	1, 3, 4, and 5	Grab	Metals, organics, inorganics, pesticides, PCBs, herbicides, and physical tests	Unvalidated	Limited documentation

Summary of Surface Water and CSO Datasets for the Lower Passaic River Study Area Remedial Investigation

Data Collection Event	Date of Collection	Number of Samples ^a	Location (RM)	Sample Type	Analyses	Level of Validation	Known Data Issues or Limitations
GLEC/NJDEP – NJTRWP/CARP CSO Sampling	2001 to 2004	35	5 SWOs and 9 CSOs	Grab	PCDDs/PCDFs, metals, PAHs, PCBs, pesticides, and wet chemistry	Unknown	Unknown quality
MPI – 2008 CSO/SWO and Tributary Storm Event Sampling	January 11, February 1, February 13, and March 8, 2008	20 locations; 17 SWO, 13 CSO, 8 tributaries, and 10 sediment trap samples	8 SWOs, 5 CSOs, 3 tributaries ^b , and 4 sediment trap samples	Large-volume aqueous and sediment	PCDDs, PCB congeners, PAHs, pesticides, metals, TOC or POC, grain size, and radiological parameters	Partial	None known

Notes:

Sources consulted to compile the information presented in the table include: Tierra Solutions, Inc. (2003, 2004); Battelle (2005); The Louis Berger Group (2012, 2014); and site databases (e.g., [ciarpweb.org](http://www.ciarpweb.org) and [carppweb.org](http://www.carppweb.org)).

a. Numbers are approximate and may vary depending on how quality assurance samples were counted.

b. Reference to "3 tributaries" consists of head-of-tie locations on Second River, Third River, and Saco & River.

BOD: biological oxygen demand

CARP: Contamination Assessment and Reduction Project

COD: chemical oxygen demand

CSO: combined sewer overflow

DO: dissolved oxygen

DOC: dissolved organic carbon

GLEC: Great Lakes Environmental Center

Isco: Teledyne Isco Company sampler

POC: particulate organic carbon

RM: River Mile

SPMD: semi-permeable membrane device

SSC: suspended solid concentration

SVOC: semivolatile organic compound

TAL: target analyte list

TDS: total dissolved solids

TKN: total Kjeldahl nitrogen

TOC: total organic carbon

TOPS: trace organics platform sampler

TS: total suspended solids

USEPA: U.S. Environmental Protection Agency

USGS: U.S. Geological Survey

VOC: volatile organic compound

VSS: volatile suspended solids

Summary of Biota Tissue Collection Events for the Lower Passaic River Study Area

Data Collection Event	Date of Collection	Number of Samples	Location (RM)	Sample Type	Species Collected	Tissue Type per Species	Analyses	Level of Validation	Known Data Issues or Limitations
NJDEP – Toxics in Biota Monitoring Program	1986 to 2004	Varied per event	Approximately 0 and 16	Fish and crab tissue	Carp Striped bass Blue crab Blue crab	Fillet Fillet Hepatopancreas and muscle Hepatopancreas and muscle	PCBs, chlordane, DDTs, and 2,3,7,8-tetrachlorodibenzo-p-dioxin	Unknown	Limited to four species at limited locations in the LPRSA (Newark Bay [RM 0] and Monroe Street Bridge [RM 16])
New York State Department of Environmental Conservation – PRermis Database	1993	1	0.1	Fish and invertebrate tissue	Oyster Butterfish Scup Striped bass	Soft tissue Fillet Fillet Fillet	PCDDs/PCDFs, metals, PCBs, pesticides, and lipids	None	No validation; limited to blue crab, oyster, and three fish species (all fillet samples) at one location near the mouth of the LPRSA
Tierra Solutions, Inc. – Passaic 1995 Biological Sampling Program	1995	13	1.1 to 4.5	Fish and crab tissue	Blue crab Mummichog Striped bass	Edible muscle and hepatopancreas Fillet	PCDDs/PCDFs, metals, PAHs, PCBs, SVOCs, pesticides, organometals, cyanide, and TPH	Full	Limited to three species collected at locations in the estuarine zone of the LPRSA only
October 1999	154	1.0 to 6.9	Fish, crab, and mussel tissue	Adult striped bass Atlantic menhaden Bluefish Crab Juvenile striped bass Mummichog Silverside Transplant ribbed mussel White perch	Adult striped bass Atlantic menhaden Bluefish Crab Juvenile striped bass Mummichog Silverside Transplant ribbed mussel White perch	Whole body Whole body Whole body Whole body Whole body – soft tissue Whole body Whole body Whole body – soft tissue Whole body	PCDDs/PCDFs, herbicides, metals, PAHs, PCBs, pesticides, SVOCs, and organometals	Full	Limited to RM 1 to RM 7 of the LPRSA
					American eel	Whole body			
					Crab	Edible muscle	PCDDs/PCDFs, herbicides, metals, PAHs, PCBs, pesticides, SVOCs, and organometals	Full	Limited to RM 1 to RM 7 of the LPRSA
					Mummichog	Whole body			
					White perch	Whole body			
					American eel	Whole body			
					Crab	Whole body – soft tissue			
					Mummichog	Whole body			
					White perch	Whole body			
					American eel	Whole body – skin off			
May 2000	41	1.0 to 6.8	Fish and crab tissue	Brown bullhead					
August 2001	13	6.0 to 6.9	Fish tissue	Brown bullhead					

Summary of Biota Tissue Collection Events for the Lower Passaic River Study Area

Data Collection Event	Date of Collection	Number of Samples ^a	Location (RN)	Sample Type	Species Collected	Tissue Type per Species	Analyses	Level of Validation	Known Data Issues or Limitations
CARP – 2000 to 2004 Harbor Fish/Crustacean Collection	2000 to 2004	109	26	Fish and crustacean tissue	American eel Mummichog White perch Blue crab Opossum shrimp Ribbed mussel Seven spine bay shrimp	Whole body, without head/viscera Whole body – homogenized Whole body, without head/viscera Whole body All edible tissue Hepatopancreas Muscle tissue Whole body Whole body – depurated Whole body All soft parts Whole body – depurated	PCDDs/PCDFs, metals, PAHs, PCBs, and pesticides	Partial	Limited to the lower portion of the LPRSA
USEPA – EMAP and REMAP within the National Coastal Assessment – Northeast/New Jersey Coast	2000 and 2002	2	Regional	Crab and lobster tissue and fish tissue	White Perch and blue crab	Whole	Metals, DDTs, PCBs, and pesticides	Full ^b	Crab tissue chemistry data available at two stations in the LPRSA and one station in Newark Bay near the mouth of the river; limited to two species (white perch and blue crab) at two locations in the LPRSA.

Summary of Biota Tissue Collection Events for the Lower Passaic River Study Area

Data Collection Event	Date of Collection	Number of Samples ^a	Location (RM)	Sample Type	Species Collected	Tissue Type per Species	Analyses	Level of Validation	Known Data Issues or Limitations
2009 Fish and Decapod Tissue Collection	August to September 2009	299	0 to 17.4	Fish and crab tissue	American eel Blue crab Brown bullhead Carp Channel catfish Largemouth bass Northern pike Smallmouth bass White catfish White perch White sucker	Fillet – skin off Whole body Carcass Hepatopancreas only Muscle only Muscle/hepatopancreas Carcass Whole body Fillet – skin on Whole body Fillet – skin off Carcass Fillet – skin on Carcass Fillet – skin on Carcass Fillet – skin on Carcass Fillet – skin off Carcass Fillet – skin on Whole body Carcass Fillet – skin on Carcass	Fillet – skin off Whole body Carcass Hepatopancreas only Muscle only Muscle/hepatopancreas Carcass Whole body Fillet – skin on Whole body Fillet – skin off Carcass Fillet – skin on Carcass Fillet – skin on Carcass Fillet – skin on Carcass Fillet – skin off Carcass Fillet – skin on Whole body Carcass Fillet – skin on Carcass	Full and summary	None known
2009 Laboratory Bioaccumulation Tissue ^c	December 2009	19	0 to 15	Worm tissue	<i>Nereis virens</i> (estuarine) and <i>Lumbriculus variegatus</i> (freshwater)	Whole body – depurated	Metals, butyltins, PAHs, SVOCs, PCB congeners, PCDDs, PCDFs, organochlorine pesticides, lipids, and percent moisture	Full	Limited tissue mass was available for some freshwater worm tissue samples and a reduced analyte priority list was implemented; an additional sample was not analyzed because of insufficient tissue mass
2010 Spring Small Forage Fish Reconnaissance Sampling	May 2010	10	2 to 5	Small forage fish	Mummichog	Egg	Lipid	Summary	None known

Summary of Biota Tissue Collection Events for the Lower Passaic River Study Area

Data Collection Event	Date of Collection	Number of Samples ^a	Location (RN)	Sample Type	Species Collected	Tissue Type per Species	Analyses	Level of Validation	Known Data Issues or Limitations
2010 Small Forage Fish Tissue Collection	June to August 2010	31	0 to 17.4	Fish tissue	Mummichog, gizzards shed; pumpkinseed, silver shiner, spottail shiner, white perch, and mixed forage fish ^d	Whole body	Metals, butyltins, PAHs, alkylated PAHs, SVOCs, PCB Aroclors, PCB congeners, PCDDs/PCDFs, organochlorine pesticides, lipids, and percent moisture	Full and summary ^e	None known
2011 Caged Bivalve Study	March to June 2011	8	0 to 17.4	Mussel tissue	Eastern elliptio mussel (freshwater) and ribbed mussel (estuarine)	Soft tissue	Metals, butyltins, PAHs, alkylated PAHs, SVOCs, PCB Aroclors, PCB congeners, PCDDs/PCDFs, organochlorine pesticides, lipids, and percent moisture	Full	Survival was low for estuarine mussels in the transitional zone due to intolerance of low salinity conditions
2012 Background Fish Tissue Survey	October 2012	17.4 above Dundee Dam to 21.5		Fish tissue	White perch, brown bullhead, channel catfish, common carp, white sucker, American eel, smallmouth bass, northern pike, banded killifish, pumpkinseed, and silver shiner	Whole body, fillet and carcass depending on species and size	Metals, butyltins, PAHs, alkylated PAHs, SVOCs, PCB Aroclors, PCB congeners, PCDDs/PCDFs, organochlorine pesticides, lipids, and percent moisture	Full	None known

Notes:

Sources consulted to compile the information presented in the table include: USEPA EMAP and USEPA REMAP, Region 2, within the National Coastal Assessment - Northeast/New Jersey Coast, available online at <http://www.epa.gov/emap/nca/html/about.html>; Tierra Solutions, Inc. (2003); CARP (<http://www.capecweb.org/main.html>); NJDEP (1990, 1993); Belton et al. (1985); Horwitz (2005, 2006); NJDEP 2004 Routine Monitoring Program for Toxics in Fish; Year 2 – Estuarine and Marine Waters (<http://www.state.nj.us/dep/dsr/2004addata.htm>); and PREmis database (created January 21, 2006; available at <http://ourpassaic.org>).

a. Numbers are approximate and may vary depending on how quality assurance samples were counted.

b. Methods used to validate data collected in USEPA's Environmental Monitoring Assessment Program are available at <http://www.epa.gov/emap/nca/html/docs/qaoqoplain.html>.

c. Laboratory bioaccumulation tests were conducted using sediment collected from the LPRSA during the 2009 Surface Sediment Sampling Program.

d. Four composite samples were composed of multiple species of small forage fish, including Atlantic silverside, gizzard shad, inland silverside, small mouth bass, striped bass, striped mullet, spottail shiner, tessellated darter, or white perch.

e. Data generated by the PAH (CARB-129 Mod), PCB congener (USEPA 166BB), PCDD/PCDF (USEPA 1613B), and organochlorine pesticide (USEPA 1699 Mod) analyses, which all used high-resolution gas chromatography/high-resolution mass spectrometry instruments, underwent full data validation. For other chemical groups, at least 20% of the data received full -level validation and up to 80% received summary-level validation.

CARP: Contamination Assessment and Reduction Project

EMAP: Environmental Monitoring and Assessment Program

ESP: Ecological Sampling program

LPR: Lower Passaic River

LPRSA: Lower Passaic River Study Area

NJDEP: New Jersey Department of Environmental Protection

PAH: polycyclic aromatic hydrocarbon

PCB: polychlorinated biphenyl

PCDD: polychlorinated dibenz-p-dioxin

PCDF: polychlorinated dibenzofuran

REMAP: Regional Environmental Monitoring and Assessment Program

RI: Remedial Investigation

RM: River Mile

SVOC: semivolatile organic compound

TPH: total petroleum hydrocarbon

USEPA: U.S. Environmental Protection Agency

Summary of Biological Community and Habitat Quality Investigations in the Lower Passaic River Study Area

Data Collection Event	Dates of Collection	Location (RM)	Number/Description of Sampling Locations	Description
Tierra Solutions, Inc. – RI-ESP Avian Community Survey	1999 to 2000	1 to 7	4 survey areas	Surveyed LPRSA bird community during four seasonal events. Birds were identified by species, life stage, location, and counted.
Avian Community Seasonal Surveys	August 2010, October 2010, January 2011, and May 2011	0 to 17.4	Transects divided evenly between the west/south and east/north banks	Qualitative survey of birds observed in habitats using transects that were surveyed a total of three times (i.e., at sunrise, midday, and sunset).
Tierra Solutions, Inc. – Phase 1 Toxicity Identification Evaluation	July 2000	1 to 7	5	Investigated sediment toxicity to benthic invertebrates in the LPRSA. Conducted sediment and porewater toxicity tests using amphipod, <i>Ampelisca doddi</i> . Included in sediment quality triad assessment.
Tierra Solutions, Inc. – RI-ESP Benthic Invertebrate Community Survey	Fall 1999 and spring 2000	1 to 7	15 LPRSA; 3 reference area stations	Evaluated structure and composition of benthic invertebrate community in LPRSA and compared to Mullica River (reference area). Included in sediment quality triad assessment.
NJDEP – Ambient Biomonitoring Network	1993, 1998 and 2006	Approximately 17 (at Dundee Dam) plus 6 stations on tributaries (e.g., Second, Third, and Saddle rivers)	7	Taxonomic identification of benthic invertebrates was conducted.
USEPA – EMAP within the National Coastal Assessment – Northeast/New Jersey Coast	2000 and 2002	Between RM 5 and RM 11	1 location with 1 grab collected	Conducted taxonomic identification and measured biomass of benthic invertebrates from numerous stations along New Jersey coast. Benthic community data were limited to three stations in the LPRSA and one station in Newark Bay near the mouth of the river.
USEPA – REMAP, Region 2, within National Coastal Assessment	1998 and 1999	2	1 location	Conducted taxonomic identification and measured biomass of benthic invertebrates from numerous stations in Region 2. Benthic community data were limited to one station in LPRSA and one station in Newark Bay near the mouth of the river.
NOAA Northeast Fisheries Science Center – Benthic Macrofauna and Associated Hydrographic Observations Collected in Newark Bay, New Jersey	Between June 1993 and March 1994	Mouth of the Passaic River	2	Conducted taxonomic identification of benthic invertebrates from numerous stations in Newark Bay. Benthic community data were limited to two stations in Newark Bay near the mouth of the river.
Aqua Survey – Taxonomic Identification of Benthic Invertebrates from Sediment Collected in the Lower 17 Miles of the LPR in Support of the Lower Passaic Restoration Project	June to July 2005	0 to 16	28	Benthic invertebrate fauna samples were collected at 28 sampling locations (25% of SPI survey locations) that were evenly distributed throughout the LPR. A subset of 100 organisms was subsampled from each sample, counted, and identified to the lowest practical taxon (family in most cases).
Benthic Invertebrate Community Seasonal Surveys	October to November 2009, June 2010, and July to August 2010	0 to 17.4	100 locations in fall 2009; 33 locations in spring and summer 2010	Benthic invertebrate community data from surface sediment grab samples (0 to 0.5 foot). A component of an SQT study (see Table 2-1 for sediment chemistry).
Sediment Toxicity Study	October to November 2009	0 to 17.4	98 locations	A component of an SQT study (see Table 2-1 for sediment chemistry).
Freshwater Reference SQI and Background Sediment Study	November 2012	17.6 (above Dundee Dam) to 21	24 locations	Benthic invertebrate community survey and sediment toxicity components of SQI assessment at freshwater reference sites in the Passaic River above Dundee Dam.
Burger – 1999 Survey of Anglers (Newark Bay Complex)	1999	Newark Bay Complex	6 locations (1 near the mouth of LPR)	Anglers (267) were interviewed to assess consumption patterns and identify the reasons why people fish and crab, as discussed in Burger (2002).
Tierra Solutions, Inc. – Creel/Angler Survey	2000 and 2001	1 to 7	Boat-based survey, 143 days; land-based survey, 101 days	Conducted boat-based counts and land-based interviews to provide data on the location and frequency of fishing. The land-based interviews provided more detailed data on a per-angler basis, including number of trips per year, number of fish or crab caught and eaten, and general demographics.
NJDEP – 1995 Urban Angler Survey (Newark Bay Complex)	1995	Newark Bay Complex	26 fishing and crabbing locations (2 in LPR)	Angler survey was performed to assess angler awareness and understanding of fish consumption advisories.

Summary of Biological Community and Habitat Quality Investigations in the Lower Passaic River Study Area

Data Collection Event	Dates of Collection	Location (RM)	Number/Description of Sampling Locations	Description
Tierra – RI-ESP Fish Community Survey	1999 and 2000	1 to 6	15	Characterized LPRSA fish community during two events: late summer/early fall 1999 and spring 2000. Coordinated effort with fish tissue sampling program; community data were used to select target species for tissue collection. Qualitative pathology information was compiled on fish not collected for tissue chemistry analyses.
NJDEP – Fish IBI Report: 2004 Sampling	Summer and fall 2004	15.5	1	Fish community survey data were compiled.
USEPA – Fish Abundance Data for New Jersey	August 2000	9.9	2	USEPA coastal assessment program collected fish community survey data.
USEPA – EMAP within the National Coastal Assessment – Northeast/New Jersey Coast	1990 and 1993	Lower 6 miles of the Passaic River	1 location with 3 grabs collected	Conducted taxonomic identification and measured biomass of benthic invertebrates from numerous stations in Virginian Province.
USACE – Flood Protection Feasibility: Main Stem Passaic River Volume III, Phase I	Spring and summer 1981	Mouth of Newark Bay up to the Dundee Dam, including the locations on the tributaries (Second, Third, and Saddle rivers)	13	Data were from USACE fish community survey, which targeted only anadromous fish.
Princeton Aqua Science – Biocommunities Study	1981 and 1982	9	3	Data were from fish community survey, which targeted only one fish species (mummichog).
Fish Community Seasonal Surveys	August to September 2009, January to February 2010, and June to July 2010	0 to 17.4	8 reaches (5 in estuarine zone and 3 in freshwater zone)	Surveys of fish communities to determine relative abundance, structure, and indices of the fish community over multiple seasons; included gross internal and external pathology evaluations on select fish.
Tierra – RI-ESP Habitat Characterization Survey of LPRSA	Fall 1999 and spring 2000	1 to 7	Continuous shoreline observations of both banks	Characterized shoreline habitats in LPRSA according to four categories: aquatic vegetation, bulkhead, riprap, and mixed vegetation. Included delineation of mudflats.
Germano & Associates – SPI Survey of Sediment and Benthic Habitat Characteristics of the LPR	June 2005	0 to 16	134	Characterized the physical and biological conditions of surface sediments to assess the river's intertidal and subtidal benthic habitats. Sampling occurred along 27 transects, 4 to 5 sampling locations per transect, from Newark Bay to Garfield, New Jersey.
Tierra – Ecological Benchmarking Assessment of LPRSA	2005	0 to 17	Continuous survey of 17 miles of LPRSA	Characterized and quantified the physical and ecological attributes, or "benchmarks," of LPRSA wetland and aquatic habitats for restoration planning purposes.
USACE – Vegetation Sampling, Wetland Delineation, and Bio-Benchmark Survey	2008	0 to 17, plus areas on tributaries and upstream of Dundee Dam	27	Conducted terrestrial vegetation surveys and wetland delineations at three locations and identified bio-benchmarks in the LPRSA. Three reference areas (identified on the basis of wetland vegetation) were also identified within and outside of the.
Habitat Identification Survey	September 2010	0 to 17.4, locations along 3 tributaries	Continuous shoreline observations of both banks	Qualitative survey of shoreline features and vegetation within the LPRSA and LPRSA tributaries.

Notes:
Sources consulted to compile the information presented in the table include: USEPA EMAP and USEPA REMAP Region 2, within the National Coastal Assessment – Northeast/New Jersey Coast, available online at <http://www.epa.gov/emap/nca/html/about.html>; USEACE (1987), NJDEP (1990, 1993), Belton et al. (1985); Horwitz (2005, 2006); Tierra Solutions, Inc. (2003, 2004); Battelle (2005); Stetlik et al. (2005); MPI (2007); Germano & Associates (2005); Shisler et al. (2008); Berger (2002); and site databases (e.g., our.state.ca.gov).
REMAP: Regional Environmental Monitoring and Assessment Program
RUFs: Remedial Investigation/Feasibility Study
RM: River Mile
SP: Sediment Profile Imaging
SQI: Sediment Quality Triad (chemistry, toxicity, and benthic invertebrate community)
Tiera: Tiera Solutions, Inc.
USACE: U.S. Army Corps of Engineers
USPA: U.S. Environmental Protection Agency
NOAA: National Oceanic and Atmospheric Administration

Summary of Bathymetry, Hydrodynamic, and Geophysical Investigations in the Lower Passaic River Study Area

Event	Date(s)	Location (RM)	Description
USACE Bathymetry Surveys	1932	10.7 to 11.5	Digitized from charts on transects spaced approximately 25 feet apart.
USACE Bathymetry Surveys	1948	10.4 to 11.3	Digitized from charts on transects spaced approximately 200 feet apart.
USACE Bathymetry Surveys	1949 and 1950	1949: RM 2.5 to RM 5; 1950: RM 5 to RM 6.8	Digitized from maps of point data with approximately 30-foot spacing in a grid pattern; post-dredge data.
USACE Bathymetry Survey	1966	RM 2.3 to RM 7.8	Digitized from maps of point data on transects spaced approximately 90 feet apart.
USACE Bathymetry Survey	1975 (pre-dredge) and 1976 (post-dredge)	RM 8 to RM 12.5	Digitized from maps of point data on transects spaced approximately 100 feet apart.
USACE Bathymetry Survey	1989	0 to 15	Digitized from maps of point data on transects spaced approximately 100 feet apart.
Tierra Solutions, Inc. – Single-beam Bathymetry Surveys	1995, 1996, 1997, 1999, and 2001	RM 1 to RM 7	Single-beam surveys on 100-foot spacing transects with points taken every 2 feet. Single-beam surveys were used for direct comparison at co-incident transects.
Aqua Survey, Inc. – Pilot Study Survey Area Single beam survey	2004	Between Jackson Street Bridge and New Jersey Turnpike	Single-beam survey using 25-foot spacing transects bank-to-bank (mean lower water) to cover the Pilot Study Dredging Area.
Aqua Survey, Inc. – Geophysical Survey for NJDOT	2005	RM 0 to RM 17.4	Five longitudinal lines and 51 transects; side scan sonar, fathometer, magnetometer, gradiometer, and sedimentological properties for 275 short push cores and for deep cores.
Gahagan & Bryant Associates, Inc. – Multi-beam Survey	2007	RM 0 to RM 14.2	Survey obtained 100% coverage in navigable water with a 5-foot grid.
Gahagan & Bryant Associates, Inc. – Single-beam Survey	2007	RM 0.5 to RM 8.2; RM 14.3 to RM 16.5	Survey was performed to duplicate the methods and equipment used during previous surveys of the river so that comparisons could be made with previous single-beam transects. Points were taken every 0.5 foot.
Gahagan & Bryant Associates, Inc. – Multi-beam and Single-beam Surveys	2008	RM 0 to RM 14.2	Co-located 2008 survey with 2007 survey in order to correlate 2007 data. Single-beam survey was conducted along 13 transects for a direct comparison with pre-2007 data. Multi-beam survey included main channel and side slopes on a 5-foot grid.
Gahagan & Bryant Associates, Inc. – Multi-beam Survey	2010	RM 0.5 to RM 14.2	Survey obtained 100% coverage in navigable water with a 5-foot grid.
Gahagan & Bryant Associates, Inc. – RM 10.9 Characterization	2011	RM 10 to RM 12	Multi-beam (RM 10 to RM 12) and single beam (RM 10.6 to RM 11.3; 86 transects at 50-foot intervals). Performed in July 2011, this survey occurred prior to storm Irene.
Gahagan & Bryant Associates, Inc. – Post-Irene Survey	2011	RM 0.5 to RM 14.2	Multi-beam; single-beam on transects from RM 1.6 to RM 8.0, as previously performed in 2008 and 2010.
Gahagan & Bryant Associates, Inc. – Multi-beam and Single-beam Surveys	2012	RM 0.5 to RM 14.2	Single-beam performed in shallow (2 to 6 feet) areas over RM 0 to RM 14; intended to characterize bed under extended low river flow conditions.
Rutgers – Hydrodynamic Survey	July 2004 to July 2005	Lower 6 miles of the Passaic River	Measured river flow, sediment movement, and seasonal changes in salinity and temperature.
MPI – Hydrodynamic Survey	November 2004 to May 2005	Upper 11 miles	Hydrodynamic data were collected as part of the LPRSA RI/FS. Work involved three buoys (moorings) at RM 8.6, RM 10, and RM 11.5; deployed from November 2004 to October 2005. Data collected included surface and bottom salinity (conductivity) and suspended solids (TSS and VSS). Vertical velocity profile data collected during deployment are incomplete.
Tierra – Hydrodynamic Studies	1995 to 1996	0.5 to 7.9	Water level fluctuations were documented at three tidal gages from April 1995 to June 1996. Velocity profile data were collected at eight cross sections from July 1995 to May 1996 (from RM 1.4 to RM 6.8) from July 1995 to May 1996. Temperature and salinity were collected at three locations (from RM 0 to RM 1.4) from July 1995 to May 1996.

Notes:

Sources consulted to compile the information presented in the table include: TAMS and Malcolm Pirnie, Inc. (2005), Tierra (2003, 2004), Aqua Survey (2006), AECOM (2010, 2013), The Louis Berger Group (2014), and site databases (e.g., ourpassaic.org).

LPRSA: Lower Passaic River Study Area

MPI: Malcolm Pirnie, Inc.

NJDOT: New Jersey Department of Transportation

RI/FS: Remedial Investigation/Feasibility Study

RW: River Mile

Tierra: Tierra Solutions, Inc.

TSS: total suspended solids

USA: U.S. Army Corps of Engineers

VSS: volatile suspended solids